

# Independent Study: Mid Report

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## Abstract

Only two levels of sectional headings, `\section` and `\subsection`, should be used. Ad nemo aut quae dolores nesciunt reprehenderit occaecati. Optio distinctio at aliquam odit dolores laudantium. Illum et qui iste et laudantium dolorum. Nihil quis qui at quia alias. Quisquam ea sit aspernatur. Labore at hic voluptas cumque eum officia repellat.

*Keywords:* Quisquam, labore at hic, voluptas cumque, eum officia repellat.

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## 1 Notes

1. Differential Dynamic Programming
2. Certificates
3. Applications in db
4. Other papers read
5. Results

## 2 Example of a first section

Here's an example parenthetical citation (**lees2010theoretical**) and a text citation: **urmson2008autonomous**. There isn't a good, up-to-date BibTeX style for the Chicago style, so we're using `biblatex-chicago` instead. This means you'll need to run `biber` instead of `bibtex` if you're compiling this template on your local  $\text{\LaTeX}$  installation: on Overleaf, `biber` is run automatically. You can add pre-notes with citations (**urmson2008autonomous**) too, as well as multiple citations (**geiger2012we**; **leesother**) in a single `\citep{...}` or `\citet{...}`.

This is an equation, numbered

$$I(\Lambda) = \sum_{i=1}^n \sum_{w=1}^q (z_{iw} \ln(\lambda_{iw}) - \lambda_{iw} - \ln(z_{iw}!)) \quad (1)$$

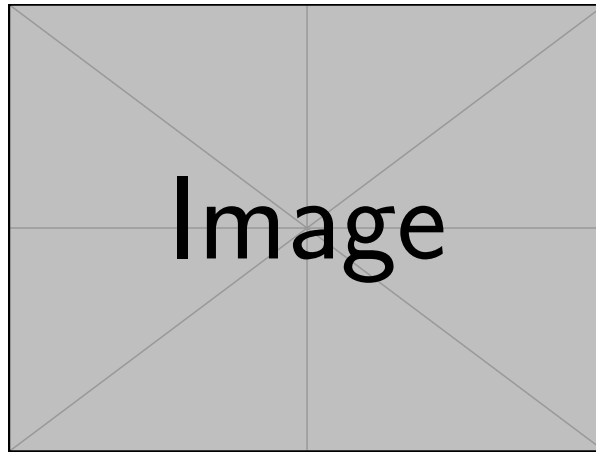
and one that is not numbered

$$\int_0^{+\infty} e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$$

and one inlined:  $e^{i\pi} = -1$ . As usual you can cross-reference equations with Equation ?? or (??).

Figure ?? shows a normal figure, while figure ?? show one made up of two sub-figures. Figure ?? is an example of a landscaped figure. You can use the `\subcaption{...}` command from the `subcaption` package to add captions for subfigures and subtables, but do not use the `subfigure` package: it is incompatible with this template.

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**Figure 1.** This is a figure caption. Let's see what happens when it's long and contains citations (geiger2012we) and cross-references: ?? . Yep, works. Captions should not contain manual line breaks!

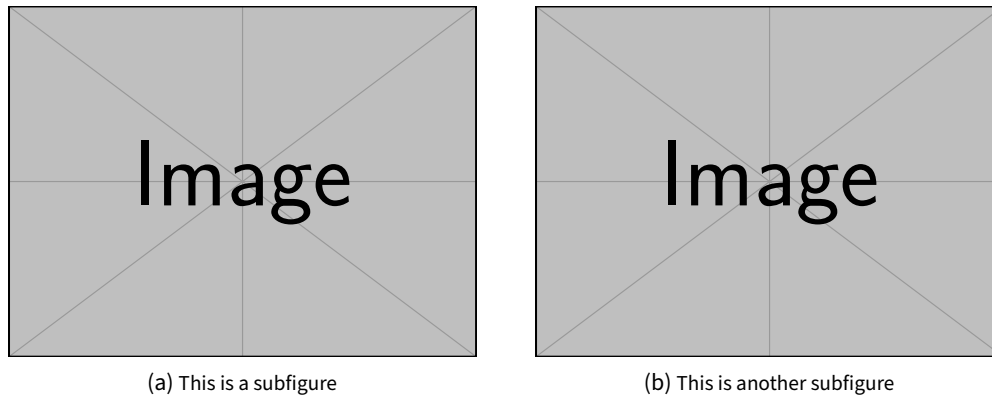
**Table 1.** Automobile Land Speed Records (GR5-10). Source: [https://www.sedl.org/afterschool/toolkits/science/pdf/ast\\_sci\\_data\\_tables\\_sample.pdf](https://www.sedl.org/afterschool/toolkits/science/pdf/ast_sci_data_tables_sample.pdf)

Speed (mph)	Driver	Car	Engine	Date
407.447	Craig Breedlove	Spirit of America	GE J47	8/5/63
413.199	Tom Green	Wingfoot Express	WE J46	10/2/64
434.22	Art Arfons	Green Monster	GE J79	10/5/64
468.719	Craig Breedlove	Spirit of America	GE J79	10/13/64
526.277	Craig Breedlove	Spirit of America	GE J79	10/15/65
536.712	Art Arfons	Green Monster	GE J79	10/27/65
555.127	Craig Breedlove	Spirit of America, Sonic 1	GE J79	11/2/65
576.553	Art Arfons	Green Monster	GE J79	11/7/65
600.601	Craig Breedlove	Spirit of America, Sonic 1	GE J79	11/15/65
622.407	Gary Gabelich	Blue Flame	Rocket	10/23/70
633.468	Richard Noble	Thrust 2	RR RG 146	10/4/83
763.035	Andy Green	Thrust SSC	RR Spey	10/15/97

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**Figure 2.** This is a caption for the entire figure

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At vero eos et accusamus et iusto odio dignissimos ducimus, qui blanditiis praesentium voluptatum deleniti atque corrupti, quos dolores et quas molestias excepturi sint, obcaecati cupiditate non-provident, similique sunt in culpa, qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio, cumque nihil impedit, quo minus id, quod maxime placeat, facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut officiis debitis aut rerum necessitatibus saepe eveniet, ut et voluptates<sup>1</sup> repudiandae sint et molestiae non-recusandae. Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias consequatur aut perferendis doloribus asperiores repellat.

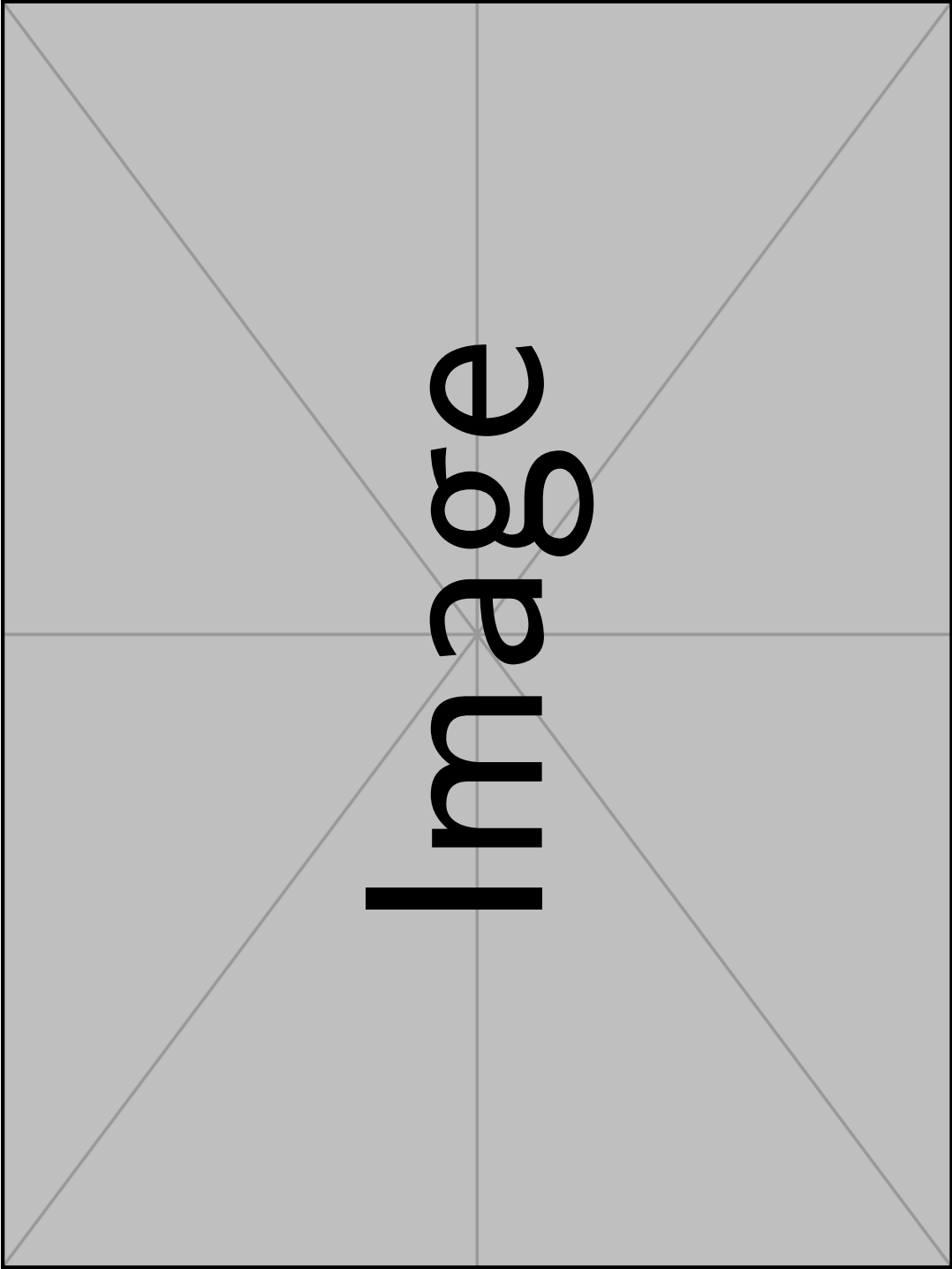
### 3 Heading on level 1 (section)

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#### 3.1 Heading on level 2 (subsection)

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**Figure 3.** This is a figure caption

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### **Heading on level 3 (subsubsection)**

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**Heading on level 4 (paragraph)** Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

## **4 Lists**

### **4.1 Example for list (itemize)**

- First itemtext
- Second itemtext
- Last itemtext
- First itemtext
- Second itemtext

#### **Example for list (4\*itemize)**

- First itemtext
  - First itemtext
    - \* First itemtext
      - First itemtext
      - Second itemtext
    - \* Last itemtext
  - First itemtext
- Second itemtext

### **4.2 Example for list (enumerate)**

1. First itemtext
2. Second itemtext
3. Last itemtext

4. First itemtext
5. Second itemtext

#### **Example for list (4\*enumerate)**

1. First itemtext
  - (a) First itemtext
    - i. First itemtext
      - A. First itemtext
      - B. Second itemtext
    - ii. Last itemtext
  - (b) First itemtext
2. Second itemtext

### 4.3 Example for list (description)

**First** itemtext  
**Second** itemtext  
**Last** itemtext  
**First** itemtext  
**Second** itemtext

#### **Example for list (4\*description)**

**First** itemtext  
**First** itemtext  
**First** itemtext  
**First** itemtext  
**Second** itemtext  
**Last** itemtext  
**First** itemtext  
**Second** itemtext

A supplementary material section will always appear before the Reference list. If you're certain that your submission won't have any supplementary material, you can add the `nosupp` option to the document class declaration, i.e.

```
\documentclass[nosupp]{cup-pan}
```

### **Supplementary Material**

(This is dummy text) For supplementary material accompanying this paper, please visit <https://doi.org/10.1017/pan.xxxx.xx>.